

CLAIMS

1. A diving apparatus which includes
 - a support structure that is engageable with a diver's head;
 - a lens that is mounted on the support structure, the lens and the support structure defining a breathing space from which the diver can be supplied with air;
 - a sealing arrangement that is positioned on the support structure sealingly to engage the diver's face so that the breathing space is substantially airtight;
 - an equalization assembly that is mounted on the support structure, the
- 10 equalization assembly including an access means to permit the diver to close his or her nostrils so that the diver can carry out an equalization procedure; and
 - a gas supply arrangement that is in fluid communication with the breathing space to supply the breathing space with gas.
2. A diving apparatus as claimed in claim 1, in which the access means is in the form of a nose-engaging member that is displaceable with respect to the support structure between an inoperative position in which the nose-engaging member is free of a diver's nose and an operative position in which the nose-engaging member can be used to block the diver's nostrils so that the diver can perform an equalization procedure.
- 20 3. A diving apparatus as claimed in claim 2, in which the equalization assembly includes a pocket-shaped, flexible membrane that has an open end that is fast with the support structure at the equalization opening and a closed end that defines the nose-engaging member, the membrane being dimensioned to accommodate the ingress of at least a diver's thumb and forefinger into the breathing space.
4. A diving apparatus as claimed in claim 2, in which the equalization assembly includes a base structure that is sealingly engageable with an edge portion of the support structure defining the equalization opening and an extendible portion interposed between
- 30 the nose-engaging member and the base structure, the extendible portion defining a volume in which at least two digits of the diver can be received so that the extendible portion can be urged toward the diver's nose into the operative position and retracted from the diver's nose into the inoperative position.
5. A diving apparatus as claimed in claim 4, in which the nose-engaging member includes a pair of sockets, each socket being shaped to receive a digit, with the sockets being spaced so that the diver's nose can be received between the sockets when the nose-engaging member is displaced into the operative position.

6. A diving apparatus as claimed in claim 5, in which a nosepiece is mounted on the sockets, the nosepiece being configured so that, as the nose-engaging member is urged into contact with the diver's nose, the nosepiece serves to close the diver's nostrils.
7. A diving apparatus as claimed in any one of the preceding claims, in which the gas supply arrangement includes a regulator that is in fluid communication with the breathing space.
8. A diving apparatus as claimed in claim 7, which includes
- 10 a connecting valve assembly, the connecting valve assembly having an inlet and an outlet, a primary air source being connectable to the inlet;
a safety valve assembly that has a primary inlet that is connected to the outlet of the connecting valve assembly, a secondary inlet and a primary outlet, the primary outlet being connected to the regulator;
a back-up, self-contained air supply having an outlet valve assembly that is connected to the secondary inlet of the safety valve assembly; and
a control means arranged on the safety valve assembly to permit the safety valve assembly to direct air flow from the back up air supply instead of the primary air source, when necessary.
- 20 9. A diving apparatus as claimed in claim 8, which includes a shoulder harness, the support structure being connected to the shoulder harness with a flexible collar member that is interposed between the shoulder harness and the helmet and the back up air supply being in the form of a breathing tank that is mounted on the shoulder harness.
10. A diving apparatus as claimed in claim 9, in which the flexible collar member includes an inflatable bladder, an inflating mechanism being mounted on the inflatable bladder to permit a diver to inflate the bladder and thus adjust a fit of the collar member.
- 30 11. A diving apparatus as claimed in any one of claims 8 to 10, in which the safety valve assembly includes a secondary outlet that is connected to the inflating mechanism with a suitable conduit so that air from said air source can be used to inflate the bladder.
12. A diving apparatus as claimed in any one of the preceding claims which includes a hood and a fastening structure that is positioned over the hood and that is engageable with the support structure, the support structure being shaped to carry the sealing arrangement so that, in use, the sealing arrangement is interposed between the diver's face and a portion of the support structure, the fastening structure being adjustable so that said portion can be moved towards and away from the diver's face.

13. A diving apparatus as claimed in claim 12, in which the support structure includes a base member to which the collar member is attached, and an adjustable cover assembly that is mounted on the base member, the cover assembly being adjustable between an operative position in which it covers the fastening structure and an inoperative position in which it allows access to the fastening structure.

14. A diving apparatus as claimed in claim 13, in which the regulator is mounted on the base member to be in fluid communication with the breathing space.

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15. A diving apparatus as claimed in claim 13 or 14, in which the base structure of the equalization assembly is detachably mounted on the base member so that the equalization assembly can be detached from the base member to provide access to the breathing space.

16. A diving apparatus as claimed in claim 15, in which the base structure is pivotally mounted on the base member to be pivotal between an open position in which the equalization assembly is detached from the base member and a closed position in which the base structure is sealingly engaged with the base member.

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17. A diving apparatus as claimed in claim 16, in which a quick release clipping assembly is arranged on the base structure and the base member, to permit the base structure to be clipped onto or off the base member.

18. An accessory for a diving apparatus having a support structure and a lens mounted on the support structure such that the lens and the support structure together define a breathing space, the support structure defining an equalization opening in communication with the breathing space for permitting a diver to equalize by pinching his or her nostrils closed, the accessory including an access means that is mounted on the support structure to close the equalization opening, the access means being configured to permit the diver to gain access to the breathing space to carry out the equalization procedure.

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19. An accessory as claimed in claim 18, in which the access means includes a base structure that is engageable with an edge portion of the support structure defining the equalization opening and a nose-engaging member that is attached to the base structure to be displaceable away from the base structure into an operative position in which the diver can shut his or her nostrils with the nose-engaging member and towards the base

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structure into an inoperative position in which the nose-engaging member is clear of the diver's nose.

20. An accessory as claimed in claim 19, in which an extendible portion is interposed between the base structure and the nose-engaging member to extend and retract as the nose-engaging member is displaced into and out of its operative position respectively.
21. An accessory as claimed in claim 19 or 20, in which a nosepiece is mounted on the nose-engaging member and is shaped to bear against the diver's nostrils to block the nostrils when the nose-engaging member is displaced into its operative position.
- 10 22. A new diving apparatus, substantially as described herein, with reference to the accompanying drawings.
23. A new accessory for a diving apparatus, substantially as described herein, with reference to the accompanying drawings.